SAT Bell work Wednesday 03/07

$$\frac{2x+6}{(x+2)^2} - \frac{2}{x+2}$$

The expression above is equivalent to $\frac{a}{(x+2)^2}$, where a is a positive constant and $x \neq -2$.

What is the value of a ? $a = 2$

$$= \frac{2x+6}{(x+2)^2} - \frac{2\cdot(x+2)}{(x+2)^2}$$

$$= \frac{2x+6-2(x+2)}{(x+2)^2}$$

$$= \frac{2x+6-2x-4}{(x+2)^2} = \frac{2}{(x+2)^2}$$

Guess & check

$$\frac{a}{(x+2)^2}$$

Section 5.2 Day 1 Proving trig identities.

Ex 1 : Prove the following identities.

given true

$$\underbrace{\cot + \tan}_{\text{Side 1}} \stackrel{?}{=} \underbrace{\sec \csc}_{\text{Side 2}}$$

take side 1 → manipulate it using trig identities → stop when side 2 shows up.

$$= \frac{\cos \cdot \cos}{\sin \cdot \cos} + \frac{\sin \cdot \sin}{\cos \cdot \sin}$$ ← common denominator.

$$= \frac{\cos^2 + \sin^2}{\sin \cos}$$

$$= \frac{1}{\sin \cdot \cos}$$

$$= \frac{1}{\sin} \cdot \frac{1}{\cos}$$

$\therefore \quad \csc \cdot \sec = \sec \cdot \csc$ ✓ Proved.

Ex 2: $\dfrac{1}{\sec x + 1} + \dfrac{1}{\sec x - 1} = 2 \csc \cot$.

$$= \frac{1 \cdot (\sec x - 1) + 1 \cdot (\sec x + 1)}{(\sec x + 1)(\sec x - 1)}$$

$$= \frac{\sec x - 1 + \sec x + 1}{(\sec x + 1)(\sec x - 1)}$$

$$= \frac{2 \sec x}{\sec^2 x - 1}$$

(special case $(a-b)(a+b) = a^2 - b^2$.)

(I 12)

$$= \frac{2 \sec x}{\tan^2 x}$$

$$= 2 \cdot \sec x \cdot \frac{1}{\tan^2 x}$$

$$= 2 \cdot \frac{1}{\cos} \cdot \cot^2 \qquad = 2 \cdot \frac{1}{\cos} \cdot \cot^2$$

$= 2 \cdot \frac{1}{\cos} \cdot \frac{\cos^2}{\sin^2}$

$= 2 \frac{\cos}{\sin^2}$

$= 2 \cdot \frac{1}{\sin} \frac{\cos}{\sin}$

$= 2 \cdot \csc \cdot \cot$

$= 2 \cdot \frac{1}{\cos} \cdot \cot \cdot \cot$

$= 2 \cdot \frac{1}{\cos} \cdot \frac{\cos}{\sin} \cdot \cot$

$= 2 \cdot \csc \cdot \cot$

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(11, 12, 13)

$2(x+3)$

$2x+6$

16*

$\frac{2}{1}\left(\frac{x}{5} + \frac{3}{4}\right)$

$\frac{2x}{5} + \frac{6}{4}$